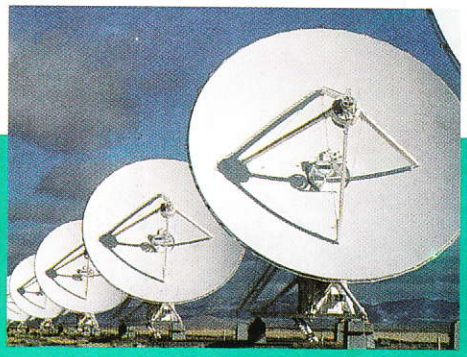
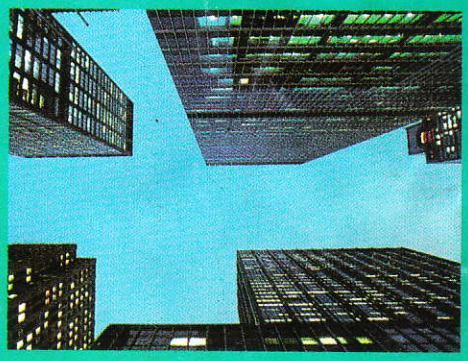
YUASA

YUASA NICKEL CADMIUM ALKALINE BATTERIES





Ref. No. P-3123H

YUASA CORPORATION

NICKEL-CADMIUM ALKALINE BATTERIES

TYPES QKC, QSC, QHC, QFD, QFG

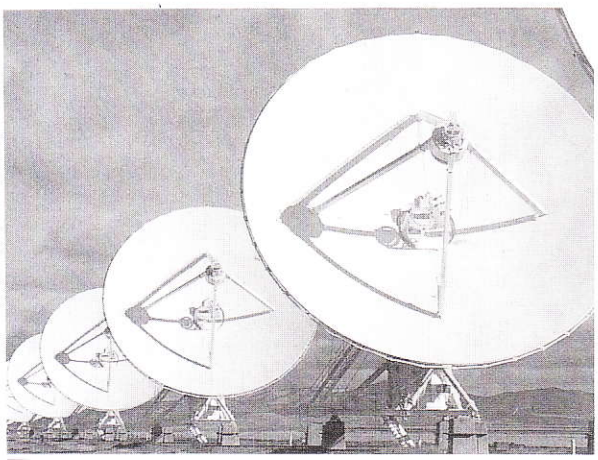
FOR ALL MODES OF APPLICATIONS

YUASA Nickel-Cadmium Alkaline Batteries come off the production line backed by more than 50 years of research and manufacturing experience in the various fields of battery technology. Five different types, QKC, QSC, QHC, QFD and QFG, are available to meet a wide range of applications where dependable and constant DC power is needed.

BATTERY TYPE SELECTION

The selection of YUASA Nickel-Cadmium Alkaline Battery types should be based on the modes of application and service intended. When properly chosen they ensure maximal performance efficiency and lowest annual costs. The Table below is a general guide to help battery type selection.

Type	Selection Guidance	Suggested Applications
QKC (Pocket Plate)	For Normal Discharge load requirements over 150 min. DC power	* Emergency Lighting and Power * Telecommunications * Marine Service (except Engine Starting) * Railway Service (Train Lighting and Signals) * Traction
QSC (Pocket Plate)	For High Rate Discharge load requiremnts 30~200 min. DC Power	* Short-Period Emergency Lighting and Power * Switchgear and Supervisory Control * UPS (Uninterruptible Power Systems) * Engine Starting (Stationary/Marine/Train) * Instrumentations * All kinds of Auxiliary Power Supply * All kinds of Standby Power Supply
QHC (Pocket Plate) QFD (Sintered Plate)	For Very High Rate Discharge load requirements 15~150 min. DC Power	
QFG (Sintered Plate)	For Ultra High Rate Discharge load requirements less than 30 min. DC Power	



ORDERING / INQUIRY INSTRUCTIONS

1. Select the proper type (QKC, QSC, QHC, QFD or QFG type) of battery to meet your specific requirements by referring to the "BATTERY TYPE SELECTION" on the first page of this catalogue.

2. Determine the proper number of cells from the tables below.

3. Determine ampere-hour capacity for the required discharge rate.

4. In case there is difficulty in selecting the proper battery type, please provide the following details to enable us to recommend the battery type most suited for your requirements:—
   (a) Application (switchgear, inverter, emergency lighting or specify what other applications)
   (b) Nominal load voltage. Also max. voltage during charging and min. voltage when discharged, measured at battery terminals.
   (c) Discharge current and time
   (d) Ambient temperature

5. State whether electrolyte (KOH) and steel racks are needed. Our cells are normally shipped under dry and discharged condition, complete with separately packed electrolyte (dry or solution).

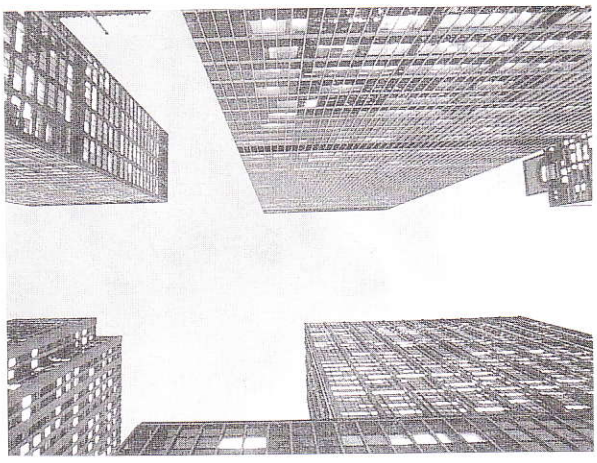
Typical Number of Cells per Battery

Nominal System Voltage	12	24	48	100	110	125	200	220	250
Number of Cells per Battery	9~11	20~22	35~44	73~90	80~99	91~113	146~180	160~198	182~225

Recommended Charging Voltages

Operating Conditions	Charging Voltage, V/cell			
	QKC Type	QSC Type	QHC Type	QFD and QFG Types
Float Charging	1.44	1.42	1.42	1.35
Boost/Equalizing Charging	1.63	1.63	1.60	1.47
Activiating Charging before putting into service	30h at current of 0.1 × C Amps. 15h at current of 0.2 × C Amps.			

Note : When total charging voltage of battery exceeds the maximum permissible load voltage the output voltage of the associated battery charger should be reduced by means of voltage drop silicon diodes.



SPECIFIC FEATURES

LONG SERVICE LIFE

YUASA Ni-Cd Battery is your best choice to achieve long term economy with high reliability if the battery is properly sized, installed and maintained.

MECHANICAL DURABILITY

YUASA Ni-Cd Batteries, constructed to withstand severe mechanical shock and vibration, compared with other types of batteries, perform unfailingly to supply the designated power requirement.

INSENSIBILITY TO ERRORS

YUASA Ni-Cd Batteries withstand over/under-charging and failure of topping-up which are some of the common causes of damage to other types of batteries.

EXELLENT HIGH RATE DISCHARGE PERFORMANCE

YUASA Ni-Cd Batteries can maintain high terminal voltage under heavy current drain.YUASA QFG type battery,of sinterd plate construction, accepts even the most severe load conditions, especially under temperatures as low as −20°C/−4°F.

HIGH RECHARGE RATE ACCEPTANCE

YUASA Ni-Cd Batteries accept higher recharge rates than other types of batteries. YUASA QFD and QFG type of battery can be fully charged by charging to 120% of the discharged ampere-hours.

LOW SELF-DISCHARGE

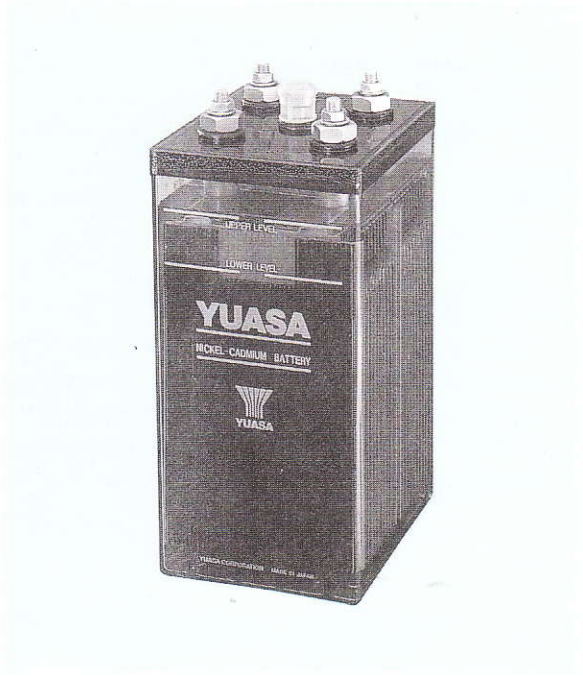
YUASA Ni-Cd Batteries are almost chemically inert on open circuit and therefore self discharge rate is negligible.

SIMPLE MAINTENANCE

See-thru plastic containers and generous reserve of electrolyte make the maintenance of YUASA Ni-Cd Batteries exceedingly simple, thereby cutting maintenance costs to the very minimum. YUASA QFD and QFG type (sintered plate) battery eliminates periodic electrolyte renewal, a disadvantage often faced by other types of Ni-Cd batteries.

NO CORROSIVE FUMES

YUASA Ni-Cd Batteries do not generate corrosive fumes, therefore they can be installed together with other electrical equipments without any fear of damage through corrosive action.



Pocket Plate Cell

Sintered Plate Cell

CELL CONSTRUCTION

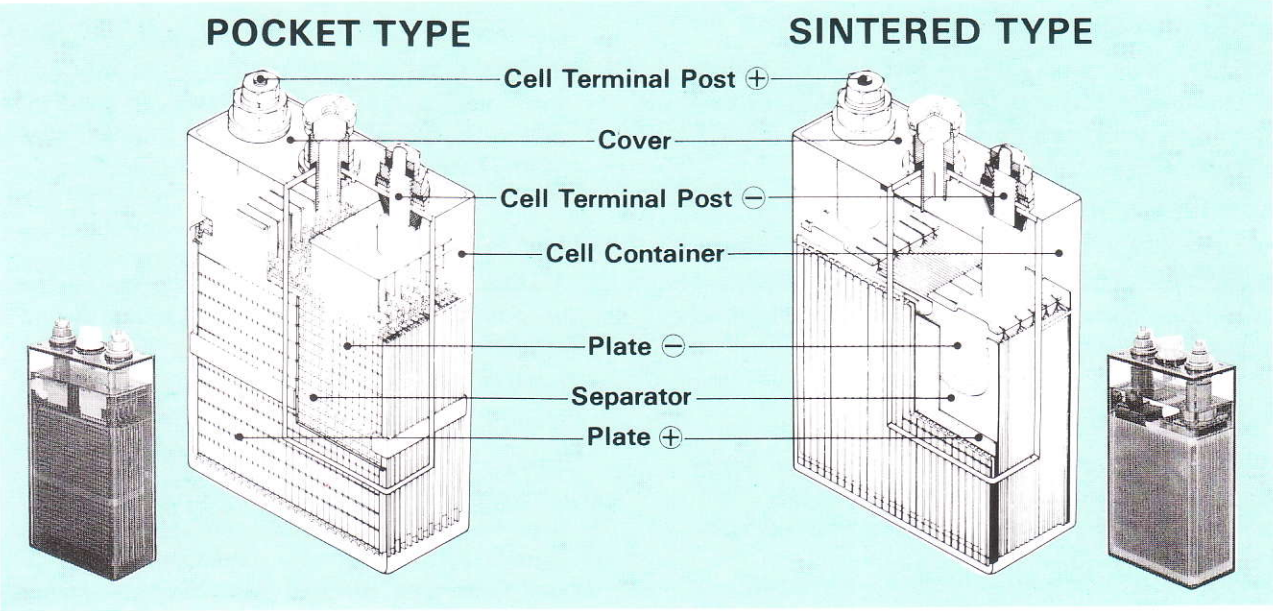


PLATE (POCKET TYPE)

Positive: Active material, mainly nickel hydrate, is retained in finely perforated steel pockets. These pockets are locked together and trimmed to form plates of the desired height and a steel U-frame is pressed around the edges to form a plate of enhanced mechanical strength, preventing any loss of active material even under most severe service conditions.

Negative: Active material, mainly cadmium obtained by simultaneous electrolysis, is retained in a pocket construction similar to that for positive plates.

PLATE (SINTERED TYPE)

Positive and negative sintered plates consist of highly porous nickel plaques manufactured by sintering finely powdered nickel on to nickel clad steel sheets. The highly porous structure thus formed is then impregnated with active material, nickel hydrate for the positive and cadmium hydrate for the negative.

SEPARATORS

Separators are made of alkali-resistant synthetic material for providing electrical separation between positive and negative plates. Integrated ribs on the separators provide additional protection to maintain a safe space between plates of opposite polarity.

CONTAINER

Moulded plastic container guarantees strong mechanical strength and clear see-thru features. Plastic covers are sealed on top of container. Max. and min. electrolyte level lines are marked on the sides of container.

CELL TERMINAL POSTS

All cells have terminal posts of nickel-plated steel with ISO metric thread which are locked to container cover by steel seal nuts to avoid seepage of electrolyte. Larger cells have two or more terminal posts of same polarity.

Posts of similar polarities should be connected together.

ELECTROLYTE

A solution of pottasium hydroxide with small amounts of lithium hydroxide. Both are of very high purity. Standard specific gravity is 1.20 at 20°C/68°F. For batteries used in cold areas, a specific gravety of 1.40 at 20°C/68°F is applicable.

Note

All specifications in this catalogue are subject to change without prior notice.

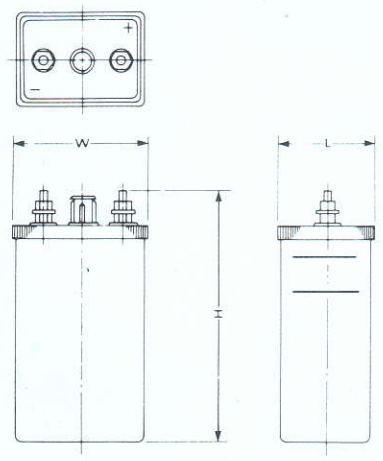
TYPE QKC (POCKET PLATE)

CAPACITIES, DIMENSIONS AND WEIGHTS

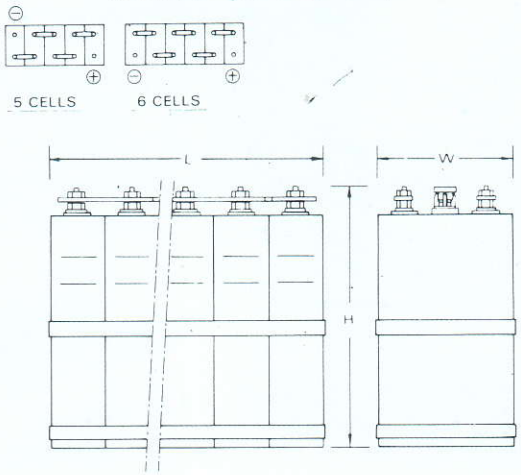
YUASA TYPE	SBA TYPE	Rated Capacity (Ah) 5HR	Weight per Cell W/Electrolyte (kg)	Approx. Volume of Electrolyte (litre)	Overall Dimensions(mm)				
					Height	Width	Length		
							Cell	Taped cell group	
								5 cells	6 cells
QKC 20C	AM 20P	20	1.5	0.3	268	76.5	48.5	243	291
QKC 30C	AM 30P	30	2.8	0.9	272	143	52	260	312
QKC 40C	AM 40P	40	2.9	0.8	272	143	52	260	312
QKC 50C	AM 50P	50	3.0	0.7	272	143	52	260	312
QKC 60C	AM 60P	60	4.1	1.2	266	143	75.5	378	453
QKC 80C	AM 80P	80	4.5	1.1	266	143	75.5	378	453
QKC 100C	AM 100P	100	6.0	1.5	270	145	100	–	–
QKC 120C	AM 120P	120	9.0	3.4	370	170	120	–	–
QKC 150C	AM 150P	150	9.5	3.2	370	170	120	–	–
QKC 200C	AM 200P	200	10.0	2.8	370	170	120	–	–
QKC 250C	AM 250P	250	16.0	5.4	370	*170	195	–	–
QKC 300C	AM 300P	300	18.0	5.0	370	*170	195	–	–
QKC 350C	AM 350P	350	19.0	4.6	370	*170	195	–	–
QKC 400C	AM 400P	400	24.5	8.2	370	*170	285	–	–
QKC 450C	AM 450P	450	25.5	7.8	370	*170	285	–	–
QKC 500C	AM 500P	500	27.0	7.0	370	*170	285	–	–
QKC 600C	AM 600P	600	36.0	10.3	370	*170	390	–	–
QKC 700C	AM 700P	700	37.5	9.5	370	*170	390	–	–
QKC 800C	AM 800P	800	39.0	8.7	370	*170	390	–	–
QKC 900C	AM 900P	900	48.0	13.0	372	*170	515	–	–
QKC 1000C	AM 1000P	1000	50.0	12.0	372	*170	515	–	–

(Rated Capacity is of 5 hours discharge rate to the end voltage of 1.00 Volt/cell.)

《UNIT CELL》



《CELLS IN BLOCK》



Remarks:

1. Cell type marked * indicate the electrolyte level on width side.
2. Required number of unit cells of smaller capacity are bundled and sealed by tape into a cell group. When cells are grouped by steel tray upon your request, the tray will be coated with alkaline-resistant paint.
3. The external dimensions of cell group contained in steel tray will be large by about 34mm in length, about 6mm in width and about 1mm in height respectively. (Inquiries for detail are invited)

TYPE QSC (POCKET PLATE)

CAPACITIES, DIMENSIONS AND WEIGHTS

YUASA TYPE	SBA TYPE	Rated Capacity (Ah) 5HR	Weight per Cell W/Electrolyte (kg)	Approx. Volume of Electrolyte (litre)	Overall Dimensions(mm)				
					Height	Width	Length		
							Cell	Taped cell group	
								5 cells	6 cells
QSC 20C	AMH 20P	20	2.7	0.83	276	143	52	260	312
QSC 30C	AMH 30P	30	2.9	0.76	276	143	52	260	312
QSC 40C	AMH 40P	40	3.0	0.72	276	143	52	260	312
QSC 50C	AMH 50P	50	4.2	1.3	276	143	75.5	378	453
QSC 60C	AMH 60P	60	4.5	1.15	276	143	75.5	378	453
QSC 80C	AMH 80P	80	5.7	1.6	276	145	100	–	–
QSC 100C	AMH 100P	100	10.0	3.6	365	170	120	–	–
QSC 120C	AMH 120P	120	10.3	3.5	365	170	120	–	–
QSC 150C	AMH 150P	150	10.7	3.3	365	170	120	–	–
QSC 200C	AMH 200P	200	16.5	6.1	360	*170	195	–	–
QSC 250C	AMH 250P	250	17.4	5.8	360	*170	195	–	–
QSC 300C	AMH 300P	300	18.1	5.3	360	*170	195	–	–
QSC 350C	AMH 350P	350	25.2	9.1	365	*170	285	–	–
QSC 400C	AMH 400P	400	26.4	8.6	365	*170	285	–	–
QSC 450C	AMH 450P	450	27.2	8.2	365	*170	285	–	–
QSC 500C	AMH 500P	500	35.9	12.0	365	*170	390	–	–
QSC 600C	AMH 600P	600	37.2	11.3	365	*170	390	–	–
QSC 700C	AMH 700P	700	46.0	15.8	365	*170	515	–	–
QSC 800C	AMH 800P	800	47.7	15.0	365	*170	515	–	–
QSC 900C	AMH 900P	900	49.5	14.2	365	*170	515	–	–
–	–	–	–	–	–	–	–	–	–

(Rated Capacity is of 5 hours discharge rate to the end voltage of 1.06 Volt/cell.)

TYPE QHC (POCKET PLATE)

CAPACITIES, DIMENSIONS AND WEIGHTS

YUASA TYPE	SBA TYPE	Rated Capacity (Ah) 5HR	Weight per Cell W/Electrolyte (kg)	Approx. Volume of Electrolyte (litre)	Overall Dimensions(mm)				
					Height	Width	Length		
							Cell	Taped cell group	
								5 cells	6 cells
QHC 20C	AH 20P	20	2.9	0.9	272	143	52	260	312
QHC 30C	AH 30P	30	3.2	0.7	272	143	52	260	312
QHC 40C	AH 40P	40	4.5	1.2	266	143	75.5	378	453
QHC 50C	AH 50P	50	4.7	1.1	266	143	75.5	378	453
QHC 60C	AH 60P	60	6.1	1.6	281	145	100	–	–
QHC 80C	AH 80P	80	6.6	1.3	281	145	100	–	–
QHC 100C	AH 100P	100	11.0	3.2	370	170	120	–	–
QHC 120C	AH 120P	120	12.0	2.9	370	170	120	–	–
QHC 150C	AH 150P	150	13.0	2.6	370	170	120	–	–
QHC 200C	AH 200P	200	19.0	5.2	370	*170	195	–	–
QHC 250C	AH 250P	250	21.5	4.4	370	*170	195	–	–
QHC 300C	AH 300P	300	29.0	7.8	370	*170	285	–	–
QHC 350C	AH 350P	350	31.0	7.2	370	*170	285	–	–
QHC 400C	AH 400P	400	32.5	6.7	370	*170	285	–	–
QHC 450C	AH 450P	450	43.5	10.0	370	*170	390	–	–
QHC 500C	AH 500P	500	45.0	9.5	370	*170	390	–	–
QHC 600C	AH 600P	600	56.0	13.5	372	*170	515	–	–
QHC 700C	AH 700P	700	60.0	12.0	372	*170	515	–	–
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(Rated Capacity is of 5 hours discharge rate to the end voltage of 1.10 Volt/cell.)

TYPE QFD (SINTERED PLATE)

CAPACITIES, DIMENSIONS AND WEIGHT

YUASA TYPE	SBA TYPE	Rated Capacity (Ah) 5HR	Weight per Cell W/Electrolyte (kg)	Approx. Volume of Electrolyte (litre)	Overall Dimensions(mm)				
					Height	Width	Length		
							Cell	Taped cell group	
								5 cells	6 cells
QFD 20A	AH 20S	20	2.7	0.84	276	143	52	280	337
QFD 30A	AH 30S	30	2.9	0.78	276	143	52	280	337
QFD 40A	AH 40S	40	3.0	0.76	276	143	52	280	337
QFD 50A	AH 50S	50	3.2	0.70	276	143	52	280	337
QFD 60A	AH 60S	60	3.4	0.64	276	143	52	280	337
QFD 80B	AH 80S	80	3.8	0.58	276	143	52	280	337
QFD 100A	AH 100S	100	5.1	1.1	276	143	75.5	398	478
QFD 120B	AH 120S	120	5.6	1.0	276	143	75.5	398	478
QFD 150A	AH 150S	150	6.7	1.4	276	145	100	–	–
QFD 200A	AH 200S	200	11.8	3.0	360	170	120	–	–
QFD 250A	AH 250S	250	12.6	2.8	360	170	120	–	–
QFD 300A	AH 300S	300	17.7	5.5	360	*170	195	–	–
QFD 350A	AH 350S	350	18.5	5.3	360	*170	195	–	–
QFD 400A	AH 400S	400	19.2	5.0	360	*170	195	–	–
QFD 450B	AH 450S	450	19.9	4.8	360	*170	195	–	–
QFD 500A	AH 500S	500	27.4	8.1	365	*170	285	–	–
QFD 600A	AH 600S	600	36.1	11.6	365	*170	390	–	–
QFD 700A	AH 700S	700	37.6	11.1	365	*170	390	–	–
QFD 800A	AH 800S	800	39.2	10.5	365	*170	390	–	–
QFD 900B	AH 900S	900	40.8	10.3	365	*170	390	–	–
QFD 1000A	AH 1000S	1000	52.4	14.4	365	*170	515	–	–
QFD 1200A	AH 1200S	1200	56.7	13.2	365	*170	515	–	–

(Rated Capacity is of 5 hours discharge rate to the end voltage of 1.10 Volt/cell.)

TYPE QFG (SINTERED PLATE)

CAPACITIES, DIMENSIONS AND WEIGHT

YUASA TYPE	SBA TYPE	Rated Capacity (Ah) 5HR	Weight per Cell W/Electrolyte (kg)	Approx. Volume of Electrolyte (litre)	Overall Dimensions(mm)				
					Height	Width	Length		
							Cell	Taped cell group	
								5 cells	6 cells
QFG 20	AHH 20S	20	2.8	0.77	276	143	52	280	337
QFG 30	AHH 30S	30	3.0	0.74	276	143	52	280	337
QFG 40	AHH 40S	40	3.1	0.70	276	143	52	280	337
QFG 50	AHH 50S	50	3.3	0.67	276	143	52	280	337
QFG 60	AHH 60S	60	3.5	0.63	276	143	52	280	337
QFG 80	AHH 80S	80	4.8	1.1	276	143	75.5	398	478
QFG 100	AHH 100S	100	5.2	1.0	276	143	75.5	398	478
QFG 120	AHH 120S	120	11.5	3.2	365	170	120	–	–
QFG 150	AHH 150S	150	11.9	3.1	365	170	120	–	–
QFG 200	AHH 200S	200	12.7	2.9	365	170	120	–	–
QFG 250	AHH 250S	250	18.3	5.5	365	*170	195	–	–
QFG 300	AHH 300S	300	19.1	5.3	365	*170	195	–	–
QFG 350	AHH 350S	350	20.0	5.1	365	*170	195	–	–
QFG 400	AHH 400S	400	27.4	7.7	365	*170	285	–	–
QFG 450	AHH 450S	450	28.4	7.5	365	*170	285	–	–
QFG 500	AHH 500S	500	29.3	7.3	365	*170	285	–	–
QFG 600	AHH 600S	600	38.5	10.3	365	*170	390	–	–
QFG 700	AHH 700S	700	40.1	9.9	365	*170	390	–	–
QFG 800	AHH 800S	800	51.6	13.7	365	*170	515	–	–
QFG 900	AHH 900S	900	53.3	13.3	365	*170	515	–	–
QFG 1000	AHH 1000S	1000	58.4	11.6	365	*170	515	–	–

(Rated Capacity is of 1 hour discharge rate to the end voltage of 1.00 Volt/cell.)

CELL PERFORMANCE DATA

AVAILABLE AMPERES TO END VOLTAGE OF 1.00 VOLT PER CELL AT 25°C (77°F) FULLY CHARGED

Type:QKC

CELL TYPE	Available Amperes on Discharge to 1.00V per Cell					
	10Hr.	8Hr.	5Hr.	3Hr.	2Hr.	1Hr.
QKC 20C	2.1	2.58	4	6.25	8.51	12.5
QKC 30C	3.15	3.87	6	9.37	12.7	18.7
QKC 40C	4.21	5.16	8	12.5	17	25
QKC 50C	5.26	6.45	10	15.6	21.2	31.2
QKC 60C	6.31	7.74	12	18.7	25.5	37.5
QKC 80C	8.42	10.3	16	25	34	50
QKC 100C	10.5	12.9	20	31.2	42.5	62.5
QKC 120C	12.6	15.4	24	37.5	51	75
QKC 150C	15.7	19.3	30	46.8	63.8	93.7
QKC 200C	21	25.8	40	62.5	85.1	125
QKC 250C	26.3	32.2	50	78.1	106	156
QKC 300C	31.5	38.7	60	93.7	127	187
QKC 350C	36.8	45.1	70	109	148	218
QKC 400C	42.1	51.6	80	125	170	250
QKC 450C	47.3	58.0	90	140	191	281
QKC 500C	52.6	64.5	100	156	212	312
QKC 600C	63.1	77.4	120	187	255	375
QKC 700C	73.6	90.3	140	218	297	437
QKC 800C	84.2	103	160	250	340	500
QKC 900C	94.7	116	180	281	382	562
QKC 1000C	105	129	200	312	425	625

Type:QSC

CELL TYPE	Available Amperes on Discharge to 1.00V per Cell								
	5Hr.	2Hr.	1Hr.	0.5Hr.	15Min.	5Min.	1Min.	5Sec.	1Sec.
QSC 20C	4.08	9.75	16.6	24	30.3	37	44.4	57.1	66.6
QSC 30C	6.12	14.6	25	36.1	45.4	55.5	66.6	85.7	100
QSC 40C	8.16	19.5	33.3	48.1	60.6	74	88.8	114	133
QSC 50C	10.2	24.3	41.6	60.2	75.7	92.5	111	142	166
QSC 60C	12.2	29.2	50	72.2	90.9	111	133	171	200
QSC 80C	16.3	39	66.6	96.3	121	148	177	228	266
QSC 100C	20.4	48.7	83.3	120	151	185	222	285	333
QSC 120C	24.4	58.5	100	144	181	222	266	342	400
QSC 150C	30.6	73.1	125	180	227	277	333	428	500
QSC 200C	40.8	97.5	166	240	303	370	444	571	666
QSC 250C	51	121	208	301	378	462	555	714	833
QSC 300C	61.2	146	250	361	454	555	666	857	1000
QSC 350C	71.4	170	291	421	530	648	777	1000	1166
QSC 400C	81.6	195	333	481	606	740	888	1142	1333
QSC 450C	91.8	219	375	542	681	833	1000	1285	1500
QSC 500C	102	243	416	602	757	925	1111	1428	1666
QSC 600C	122	292	500	722	909	1111	1333	1714	2000
QSC 700C	142	341	583	843	1060	1296	1555	2000	2333
QSC 800C	163	390	666	963	1212	1481	1777	2285	2666
QSC 900C	183	439	750	1084	1363	1666	2000	2571	3000
–	–	–	–	–	–	–	–	–	–

Type:QHC/QFD

CELL TYPE	Available Amperes on Discharge to 1.00V per Cell							
	5Hr.	1Hr.	0.5Hr.	5Min.	1Min.	0.5Min.	5Sec.	1Sec.
QHC 20C QFD 20A	4.1	17.8	32.2	66.6	95.2	105	125	142
QHC 30C QFD 30A	6.2	26.7	48.3	100	142	157	187	214
QHC 40C QFD 40A	8.3	35.7	64.5	133	190	210	250	285
QHC 50C QFD 50A	10.4	44.6	80.6	166	238	263	312	357
QHC 60C QFD 60A	12.5	53.5	96.7	200	285	315	375	428
QHC 80C QFD 80B	16.6	71.4	129	266	380	421	500	571
QHC 100C QFD 100A	20.8	89.2	161	333	476	526	625	714
QHC 120C QFD 120B	25	107	193	400	571	631	750	857
QHC 150C QFD 150A	31.2	133	241	500	714	789	937	1071
QHC 200C QFD 200A	41.6	178	322	666	952	1052	1250	1428
QHC 250C QFD 250A	52	223	403	806	1086	1190	1388	1562
QHC 300C QFD 300A	62.5	267	483	967	1224	1304	1500	1666
QHC 350C QFD 350A	72.9	312	564	1129	1428	1521	1750	1944
QHC 400C QFD 400A	83.3	357	645	1290	1632	1739	2000	2222
QHC 450C QFD 450B	93.7	401	725	1451	1836	1956	2250	2500
QHC 500C QFD 500A	104	446	806	1612	2040	2173	2500	2777
QHC 600C QFD 600A	125	535	967	1935	2448	2608	3000	3333
QHC 700C QFD 700A	145	625	1129	2258	2857	3043	3500	3888
QFD 800A	166	714	1290	2580	3265	3478	4000	4444
QFD 900B	187	803	1451	2903	3673	3913	4500	5000
QFD 1000A	208	892	1612	3225	4081	4347	5000	5555
QFD 1200A	250	1071	1935	3870	4897	5714	6000	6666

Type : QFG

CELL TYPE	Available Amperes on Discharge to 1.00V per Cell							
	1 Hr.	0.5 Hr.	15 Min.	5 Min.	1 Min.	0.5Min.	5 Sec.	1 Sec.
QFG 20	20	37.7	66.6	114	156	168	181	190
QFG 30	30	56.6	100	171	234	252	272	285
QFG 40	40	75.4	113	228	312	336	363	380
QFG 50	50	94.3	166	285	390	420	454	476
QFG 60	60	113	200	342	468	504	545	571
QFG 80	80	150	266	457	625	672	727	761
QFG 100	100	188	333	571	781	840	909	952
QFG 120	120	226	400	685	937	1008	1090	1142
QFG 150	150	283	500	857	1171	1260	1363	1428
QFG 200	200	377	666	1142	1562	1680	1818	1904
QFG 250	250	471	833	1428	1953	2100	2272	2380
QFG 300	300	566	1000	1714	2343	2521	2727	2857
QFG 350	350	660	1166	2000	2734	2941	3181	3333
QFG 400	400	754	1333	2285	3125	3361	3636	3809
QFG 450	450	849	1500	2571	3515	3781	4090	4285
QFG 500	500	943	1666	2857	3906	4201	4545	4761
QFG 600	600	1132	2000	3428	4687	5042	5454	5714
QFG 700	700	1320	2333	4000	5468	5882	6363	6666
QFG 800	800	1509	2666	4571	6250	6722	7272	7619
QFG 900	900	1698	3000	5142	7031	7563	8181	8571
QFG 1000	1000	1886	3333	5714	7812	8403	9090	9523

CELL PERFORMANCE DATA

AVAILABLE AMPERES TO END VOLTAGE OF 1.06 VOLT PER CELL AT 25°C (77°F) FULLY CHARGED

Type:QKC

CELL TYPE	Available Amperes on Discharge to 1.06V per Cell					
	10Hr.	8Hr.	5Hr.	3Hr.	2Hr.	1Hr.
QKC 20C	2.04	2.5	3.84	5.4	7.01	10.2
QKC 30C	3.06	3.75	5.76	8.1	10.5	15.3
QKC 40C	4.08	5	7.69	10.8	14	20.5
QKC 50C	5.1	6.25	9.61	13.5	17.5	25.6
QKC 60C	6.12	7.5	11.5	16.2	21	30.7
QKC 80C	8.16	10	15.3	21.6	28	41
QKC 100C	10.2	12.5	19.2	27	35	51.2
QKC 120C	12.2	15	23	32.4	42.1	61.5
QKC 150C	15.3	18.7	28.8	40.5	52.6	76.9
QKC 200C	20.4	25	38.4	54	70.1	102
QKC 250C	25.5	31.2	48	67.5	87.7	128
QKC 300C	30.6	37.5	57.6	81	105	153
QKC 350C	35.7	43.7	67.3	94.5	122	179
QKC 400C	40.8	50	76.9	108	140	205
QKC 450C	45.9	56.2	86.5	121	157	230
QKC 500C	51	62.5	96.1	135	175	256
QKC 600C	61.2	75	115	162	210	307
QKC 700C	71.4	87.5	134	189	245	358
QKC 800C	81.6	100	153	216	280	410
QKC 900C	91.8	112	173	243	315	461
QKC 1000C	102	125	192	270	350	512

Type:QSC

CELL TYPE	Available Amperes on Discharge to 1.06V per Cell							
	5Hr.	2Hr.	1Hr.	0.5Hr.	5Min.	1Min.	5Sec.	1Sec.
QSC 20C	4	8.51	13.7	20	31.2	37	46.5	52.6
QSC 30C	6	12.7	20.6	30	46.8	55.5	69.7	78.9
QSC 40C	8	17	27.5	40	62.5	74	93	105
QSC 50C	10	21.2	34.4	50	78.1	92.5	116	131
QSC 60C	12	25.5	41.3	60	93.7	111	139	157
QSC 80C	16	34	55.1	80	125	148	186	210
QSC 100C	20	42.5	68.9	100	156	185	232	263
QSC 120C	24	51	82.7	120	187	222	279	315
OSC 150C	30	63.8	103	150	234	277	348	394
QSC 200C	40	85.1	137	200	312	370	465	526
QSC 250C	50	106	172	250	390	462	581	657
QSC 300C	60	127	206	300	468	555	697	789
QSC 350C	70	148	241	350	546	648	813	921
QSC 400C	80	170	275	400	625	740	930	1052
QSC 450C	90	191	310	450	703	833	1046	1184
QSC 500C	100	212	344	500	781	925	1162	1315
QSC 600C	120	255	413	600	937	1111	1395	1578
QSC 700C	140	297	482	700	1093	1296	1627	1842
QSC 800C	160	340	551	800	1250	1481	1860	2105
QSC 900C	180	382	620	900	1406	1666	2093	2368
–	–	–	–	–	–	–	–	–

Type:QHC/QFD

CELL TYPE	Available Amperes on Discharge to 1.06V per Cell							
	5Hr.	1Hr.	0.5Hr.	5Min.	1Min.	0.5Min.	5Sec.	1Sec.
QHC 20C QFD 20A	4.08	15.3	27.3	60.6	78.4	85.1	97.5	108
QHC 30C QFD 30A	6.12	23	41	90.9	117	127	146	162
QHC 40C QFD 40A	8.16	30.7	54.7	121	156	170	195	216
QHC 50C QFD 50A	10.2	38.4	68.4	151	196	212	243	270
QHC 60C QFD 60A	12.2	46.1	82.1	181	235	255	292	324
QHC 80C QFD 80B	16.3	61.5	109	242	313	340	390	432
QHC 100C QFD 100A	20.4	76.9	136	303	392	425	487	540
QHC 120C QFD 120B	24.4	92.3	164	363	470	510	585	648
QHC 150C QFD 150A	30.6	115	205	454	588	638	731	810
QHC 200C QFD 200A	40.8	153	273	606	784	851	975	1081
QHC 250C QFD 250A	51	192	342	714	892	961	1136	1250
QHC 300C QFD 300A	61.2	230	410	821	1000	1071	1276	1428
QHC 350C QFD 350A	71.4	269	479	958	1166	1250	1489	1666
QHC 400C QFD 400A	81.6	307	547	1095	1333	1428	1702	1904
QHC 450C QFD 450B	91.8	346	616	1232	1500	1607	1914	2142
QHC 500C QFD 500A	102	384	684	1369	1666	1785	2127	2380
QHC 600C QFD 600A	122	461	821	1643	2000	2142	2553	2857
QHC 700C QFD 700A	142	538	958	1917	2333	2500	2978	3333
QFD 800A	163	615	1095	2191	2666	2857	3404	3809
QFD 900B	183	692	1232	2465	3000	3214	3829	4285
QFD 1000A	204	769	1369	2739	3333	3571	4255	4761
QFD 1200A	244	923	1643	3287	4000	4285	5106	5714

Type : QFG

CELL TYPE	Available Amperes on Discharge to 1.06V per Cell						
	1 Hr.	0.5 Hr.	5 Min.	1 Min.	0.5 Min.	5 Sec.	1 Sec.
QFG 20	19.2	35	93	125	133	142	148
QFG 30	28.8	52.6	139	187	200	214	222
QFG 40	38.4	70.1	186	250	266	285	296
QFG 50	48	87.7	232	312	333	357	370
QFG 60	57.6	105	279	375	400	428	444
QFG 80	76.9	140	372	500	533	571	592
QFG 100	96.1	175	465	625	666	714	740
QFG 120	115	210	558	750	800	857	888
QFG 150	144	263	697	937	1000	1071	1111
QFG 200	192	350	930	1250	1333	1428	1481
QFG 250	240	438	1162	1562	1666	1785	1851
QFG 300	288	526	1395	1875	2000	2142	2222
QFG 350	336	614	1627	2187	2333	2500	2592
QFG 400	384	701	1860	2500	2666	2857	2962
QFG 450	432	789	2093	2812	3000	3214	3333
QFG 500	480	877	2325	3125	3333	3571	3703
QFG 600	576	1052	2790	3750	4000	4285	4444
QFG 700	673	1228	3255	4375	4666	5000	5185
QFG 800	769	1403	3720	5000	5333	5714	5925
QFG 900	865	1578	4186	5625	6000	6428	6666
QFG 1000	961	1754	4651	6250	6666	7142	7407

AVAILABLE AMPERES TO END VOLTAGE OF 1.10 VOLT PER CELL AT 25°C (77°F) FULLY CHARGED

Type:QKC

CELL TYPE	Available Amperes on Discharge to 1.10V per Cell					
	10Hr.	8Hr.	5Hr.	3Hr.	2Hr.	1Hr.
QKC 20C	2	2.4	3.57	4.76	5.97	8.69
QKC 30C	3	3.61	5.35	7.14	8.95	13
QKC 40C	4	4.81	7.14	9.52	11.9	17.3
QKC 50C	5	6.02	8.92	11.9	14.9	21.7
QKC 60C	6	7.22	10.7	14.2	17.9	26
QKC 80C	8	9.63	14.2	19	23.8	34.7
QKC 100C	10	12	17.8	23.8	29.8	43.4
QKC 120C	12	14.4	21.4	28.5	35.8	52.1
QKC 150C	15	18	26.7	35.7	44.7	65.2
QKC 200C	20	24	35.7	47.6	59.7	86.9
QKC 250C	25	30.1	44.6	59.5	74.6	108
QKC 300C	30	36.1	53.5	71.4	89.5	130
QKC 350C	35	42.1	62.5	83.3	104	152
QKC 400C	40	48.1	71.4	95.2	119	173
QKC 450C	45	54.2	80.3	107	134	195
QKC 500C	50	60.2	89.2	119	149	217
QKC 600C	60	72.2	107	142	179	260
QKC 700C	70	84.3	125	166	208	304
QKC 800C	80	96.3	142	190	238	347
QKC 900C	90	108	160	214	268	391
QKC 1000C	100	120	178	238	298	434

Type:QSC

CELL TYPE	Available Amperes on Discharge to 1.10V per Cell							
	5Hr.	2Hr.	1Hr.	0.5Hr.	5Min.	1Min.	5Sec.	1Sec.
QSC 20C	3.77	7.54	11.7	16.9	25	29.4	36.3	41.6
QSC 30C	5.66	11.3	17.6	25.4	37.5	44.1	54.5	62.5
QSC 40C	7.54	15	23.5	33.8	50	58.8	72.7	83.3
QSC 50C	9.43	18.8	29.4	42.3	62.5	73.5	90.9	104
QSC 60C	11.3	22.6	35.2	50.8	75	88.2	109	125
QSC 80C	15	30.1	47	67.7	100	117	145	166
QSC 100C	18.8	37.7	58.8	84.7	125	147	181	208
QSC 120C	22.6	45.2	70.5	101	150	176	218	250
QSC 150C	28.3	56.6	88.2	127	187	220	272	312
QSC 200C	37.7	75.4	117	169	250	294	363	416
QSC 250C	47.1	94.3	147	211	312	367	454	520
QSC 300C	56.6	113	176	254	375	441	545	625
QSC 350C	66	132	205	296	437	514	636	729
QSC 400C	75.4	150	235	338	500	588	727	833
QSC 450C	84.9	169	264	381	562	661	818	937
QSC 500C	94.3	188	294	423	625	735	909	1041
QSC 600C	113	226	352	508	750	882	1090	1250
QSC 700C	132	264	411	593	875	1029	1272	1458
QSC 800C	150	301	470	677	1000	1176	1454	1666
QSC 900C	169	339	529	762	1125	1323	1636	1875
–	–	–	–	–	–	–	–	–

Type:QHC/QFD

CELL TYPE	Available Amperes on Discharge to 1.10V per Cell							
	5Hr.	1Hr.	0.5Hr.	5Min.	1Min.	0.5Min.	5Sec.	1Sec.
QHC 20C QFD 20A	4	13.7	23.5	47	62.5	68.9	83.3	95.2
QHC 30C QFD 30A	6	20.6	35.2	70.5	93.7	103	125	142
QHC 40C QFD 40A	8	27.5	47	94.1	125	137	166	190
QHC 50C QFD 50A	10	34.4	58.8	117	156	172	208	238
QHC 60C QFD 60A	12	41.3	70.5	141	187	206	250	285
QHC 80C QFD 80B	16	55.1	94.1	188	250	275	333	380
QHC 100C QFD 100A	20	68.9	117	235	312	344	416	476
QHC 120C QFD 120B	24	82.7	141	282	375	413	500	571
QHC 150C QFD 150A	30	103	176	352	468	517	625	714
QHC 200C QFD 200A	40	137	235	470	625	689	833	952
QHC 250C QFD 250A	50	172	294	568	714	781	925	1086
QHC 300C QFD 300A	60	206	352	659	810	869	1034	1200
QHC 350C QFD 350A	70	241	411	769	945	1014	1206	1400
QHC 400C QFD 400A	80	275	470	879	1081	1159	1379	1600
QHC 450C QFD 450B	90	310	529	989	1216	1304	1551	1800
QHC 500C QFD 500A	100	344	588	1098	1351	1449	1724	2000
QHC 600C QFD 600A	120	413	705	1318	1621	1739	2068	2400
QHC 700C QFD 700A	140	482	823	1538	1891	2028	2413	2800
QFD 800A	160	551	941	1758	2162	2318	2758	3200
QFD 900B	180	620	1058	1978	2432	2608	3103	3600
QFD 1000A	200	689	1176	2197	2702	2898	3448	4000
QFD 1200A	240	827	1411	2637	3243	3478	4137	4800

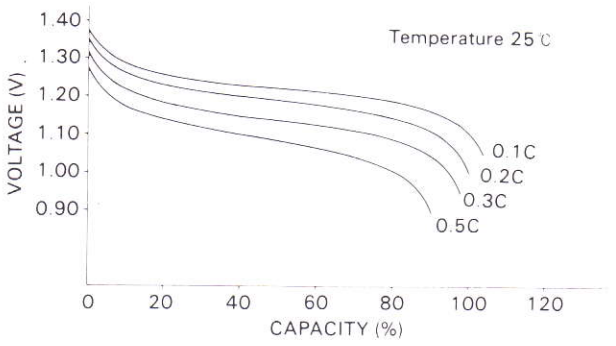
Type : QFG

CELL TYPE	Available Amperes on Discharge to 1.10V per Cell						
	1 Hr.	0.5 Hr.	5 Min.	1 Min.	0.5Min.	5 Sec.	1 Sec.
QFG 20	18.5	32.2	78.4	105	114	117	121
QFG 30	27.7	48.3	117	157	171	176	181
QFG 40	37	64.5	156	210	228	235	242
QFG 50	46.2	80.6	196	263	285	294	303
QFG 60	55.5	96.7	235	315	342	352	363
QFG 80	74	129	313	421	457	470	484
QFG 100	92.5	161	392	526	571	588	606
QFG 120	111	193	470	631	685	705	727
QFG 150	138	241	588	789	857	882	909
QFG 200	185	322	784	1052	1142	1176	1212
QFG 250	231	403	980	1315	1428	1470	1515
QFG 300	277	483	1176	1578	1714	1764	1818
QFG 350	324	564	1372	1842	2000	2058	2121
QFG 400	370	645	1568	2105	2285	2352	2424
QFG 450	416	725	1764	2368	2571	2647	2727
QFG 500	462	806	1960	2631	2857	2941	3030
QFG 600	555	967	2352	3157	3428	3529	3636
QFG 700	648	1129	2745	3684	4000	4117	4242
QFG 800	740	1290	3137	4210	4571	4705	4848
QFG 900	833	1451	3529	4736	5142	5294	5454
QFG 1000	925	1612	3921	5263	5714	5882	6060

DISCHARGE PERFORMANCE

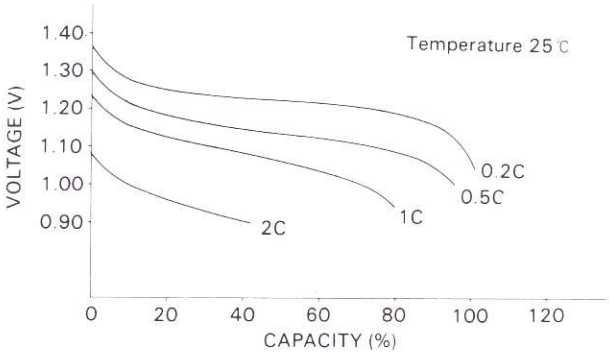
TYPICAL DISCHARGE CHARACTERISTICS AT 25°C (77°F)

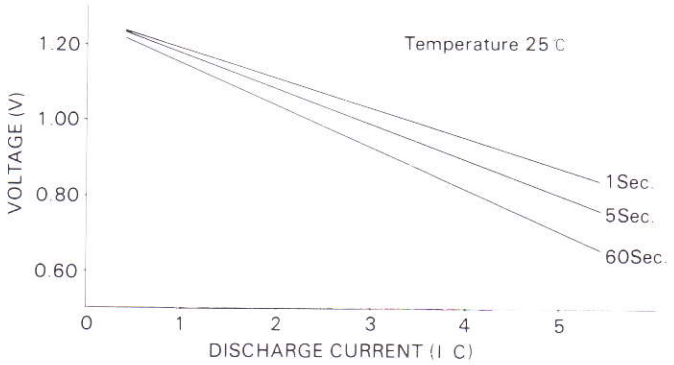
Type: QKC



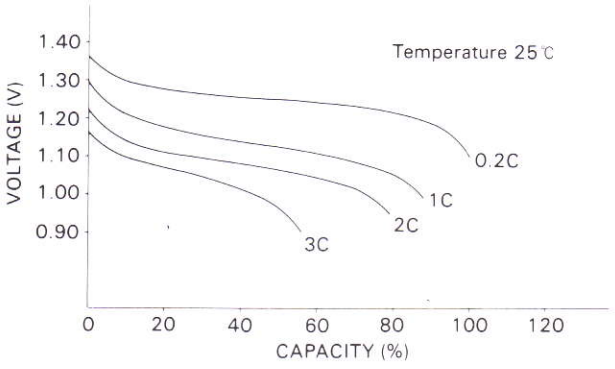
* For all cell types the rated capacity "C" is defined as available ampere hours (Ah) at 5 hours discharge (1 hour discharge for QFG type) to the end voltage of each type:

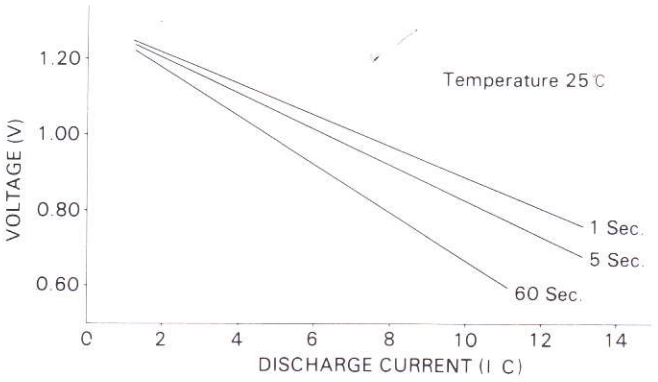
Type: QSC



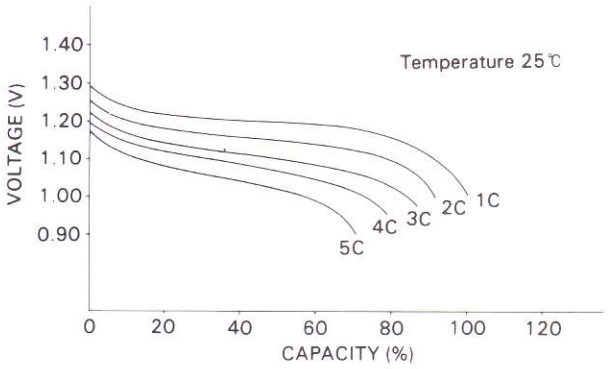


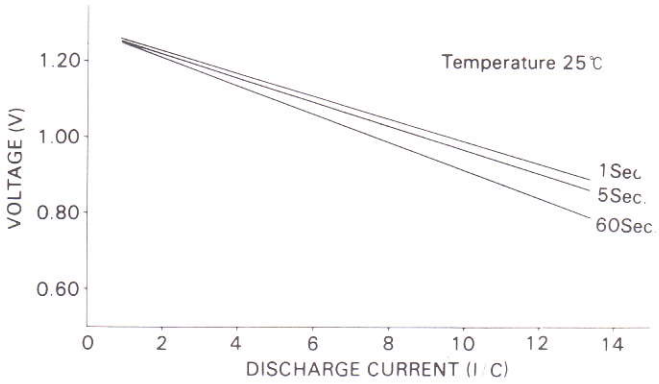
Type: QHC/QFD





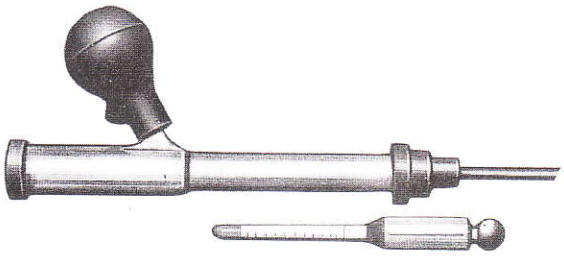
Type: QFG





STANDARD MAINTENANCE TOOLS

Item	Description	Q'ty	Item	Description	Q'ty
Syringe-Type Hydrometer	Syringe Float Sp.gr.range 1.10-1.30	1	Plastic Syringe	Capacity 180cc	1
			Funnel	Plastic	1
Rod Thermometer	Range −20°C~100°C (−4~212°F) Red alcohol	1	Socket Type Spanner	For terminal screwing	1
			Tool Box	Plastic	1
Plastic Jug (No.3)	Capacity 2 litres	1	DC Voltmeter (Option)	Voltage range 0-3V Class 1.5	1

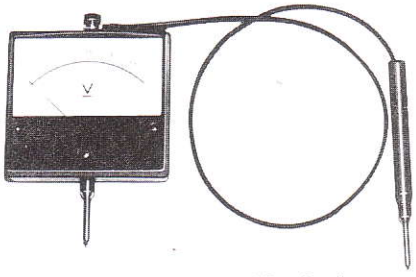


Syringe-Type Hydrometer

Jug

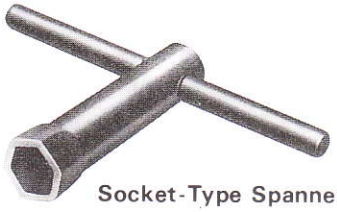
Funnel

Syringe

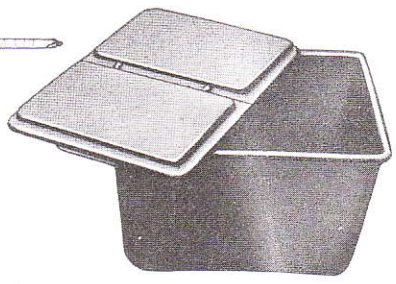


DC Voltmeter (Option)

Rod Thermometer



Socket-Type Spanner



Tool Box

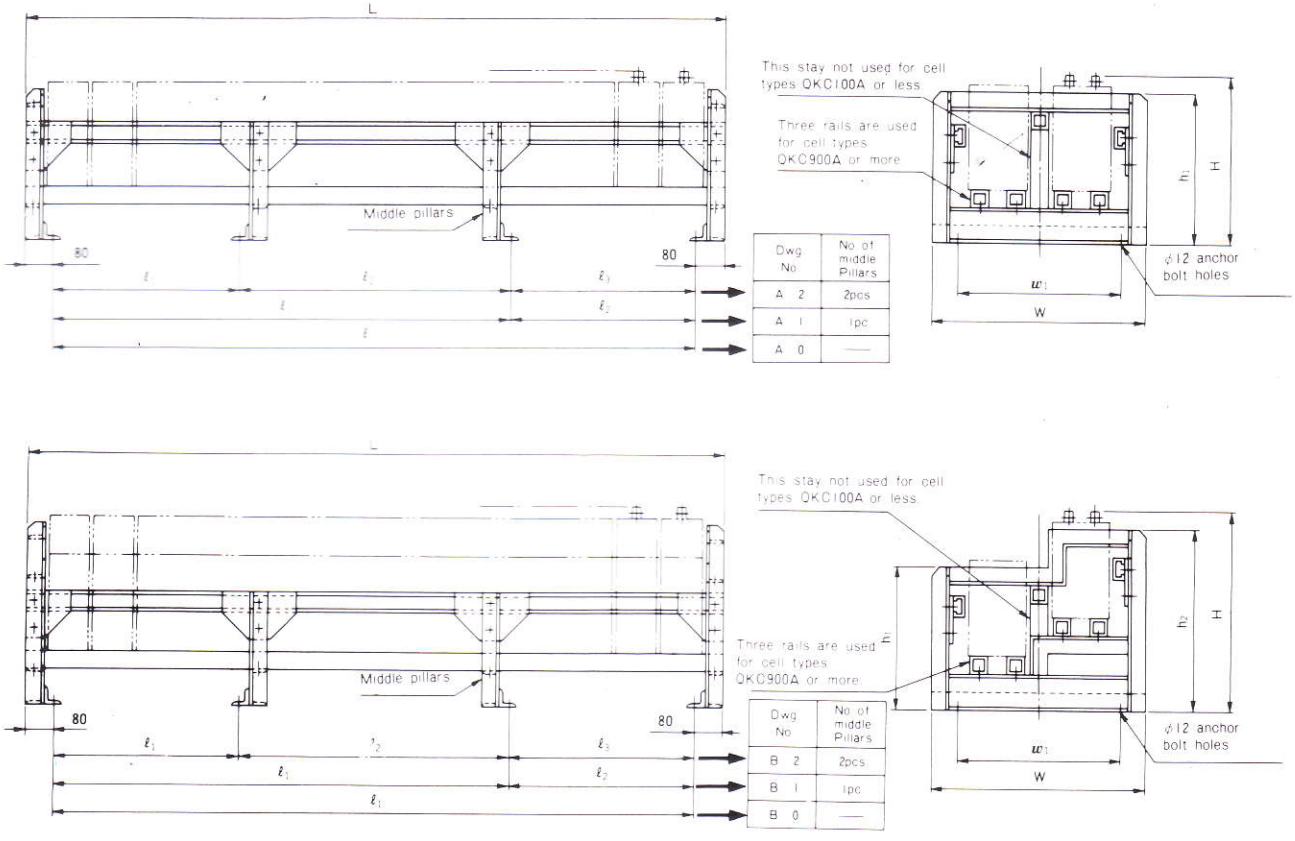
BATTERY STEEL RACK (EARTHQUAKE-PROOF)

1.Single Tier Construction Rack

	Cell Type	Rack Construction	Overall Dimensions Approx.(mm)							
			Height	Width	Length					
					10 cells/Row	11 cells/Row	12 cells/Row	13 cells/Row	14 cells/Row	15 cells/Row
For QKC, QSC, QHC Pocket Type	QKC30C~50C QSC20C~40C QHC20C~30C	1 Tier 2 Row 1 Tier 2 Step	485 567	520	630 (A-0)(B-0)	682 (A-0)(B-0)	734 (A-0)(B-0)	786 (A-0)(B-0)	838 (A-0)(B-0)	890 (A-0)(B-0)
	QKC60C~80C QSC50C~60C QHC40C~50C	1 Tier 2 Row 1 Tier 2 Step	485 567	520	865 (A-0)(B-0)	941 (A-0)(B-0)	1016 (A-0)(B-0)	1092 (A-0)(B-0)	1167 (A-0)(B-0)	1243 (A-0)(B-0)
	QKC100C QSC80C QHC60C~80C	1 Tier 2 Row 1 Tier 2 Step	485 567	524	1155 (A-0)(B-0)	1260 (A-0)(B-0)	1365 (A-0)(B-0)	1470 (A-0)(B-0)	1575 (A-0)(B-0)	1680 (A-0)(B-0)
	QKC120C~200C QSC100C~150C QHC100C~150C	1 Tier 2 Row 1 Tier 2 Step	575 698	570	1355 (A-1)(B-1)	1480 (A-1)(B-1)	1605 (A-1)(B-1)	1730 (A-1)(B-1)	1855 (A-1)(B-1)	1980 (A-1)(B-1)
	QKC250C~350C QSC200C~300C QHC200C~250C	1 Tier 2 Row 1 Tier 2 Step	575 698	620	1855 (A-1)(B-1)	2030 (A-1)(B-1)	2205 (A-1)(B-1)	2380 (A-1)(B-1)	2555 (A-1)(B-1)	2730 (A-1)(B-1)
	QKC400C~500C QSC350C~450C QHC300C~400C	1 Tier 2 Row 1 Tier 2 Step	602 725	800	1855 (A-1)(B-1)	2030 (A-1)(B-1)	2205 (A-1)(B-1)	2380 (A-1)(B-1)	2555 (A-1)(B-1)	2730 (A-1)(B-1)
	QKC600C~800C QSC500C~600C QHC450C~500C	1 Tier 2 Row 1 Tier 2 Step	598 721	1010	1855 (A-1)(B-1)	2030 (A-1)(B-1)	2205 (A-2)(B-2)	2380 (A-2)(B-2)	2555 (A-2)(B-2)	2730 (A-2)(B-2)
	QKC900C~1000C QSC700C~900C QHC600C~700C	1 Tier 2 Row	598	1260	1855(A-1)	2030(A-1)	2205(A-2)	2380(A-2)	2555(A-2)	2730(A-2)
For QFD, QFG, Sintered Plate Type	QFD20A~80B QFG20~60	1 Tier 2 Row 1 Tier 2 Step	426 508	520	675 (A-0)(B-0)	732 (A-0)(B-0)	789 (A-0)(B-0)	846 (A-0)(B-0)	903 (A-0)(B-0)	960 (A-0)(B-0)
	QFD100A~120B QFG80~100	1 Tier 2 Row 1 Tier 2 Step	426 508	520	910 (A-0)(B-0)	991 (A-0)(B-0)	1071 (A-0)(B-0)	1152 (A-0)(B-0)	1232 (A-0)(B-0)	1313 (A-0)(B-0)
	QFD150A	1 Tier 2 Row 1 Tier 2 Step	426 508	524	1155 (A-0)(B-0)	1260 (A-0)(B-0)	1365 (A-0)(B-0)	1470 (A-0)(B-0)	1575 (A-0)(B-0)	1680 (A-0)(B-0)
	QFD200A~250A QFG120~200	1 Tier 2 Row 1 Tier 2 Step	510 633	570	1355 (A-1)(B-1)	1480 (A-1)(B-1)	1605 (A-1)(B-1)	1730 (A-1)(B-1)	1855 (A-1)(B-1)	1980 (A-1)(B-1)
	QFD300A~450B QFG250~350	1 Tier 2 Row 1 Tier 2 Step	510 633	620	1855 (A-1)(B-1)	2030 (A-1)(B-1)	2205 (A-1)(B-1)	2380 (A-1)(B-1)	2555 (A-1)(B-1)	2730 (A-1)(B-1)
	QFD500A QFG400~500	1 Tier 2 Row 1 Tier 2 Step	515 638	800	1855 (A-1)(B-1)	2030 (A-1)(B-1)	2205 (A-1)(B-1)	2380 (A-1)(B-1)	2555 (A-1)(B-1)	2730 (A-1)(B-1)
	QFD600A~900B QFG600~700	1 Tier 2 Row 1 Tier 2 Step	515 638	1010	1855 (A-1)(B-1)	2030 (A-1)(B-1)	2205 (A-2)(B-2)	2380 (A-2)(B-2)	2555 (A-2)(B-2)	2730 (A-2)(B-2)
	QFD1000A~1200A QFG800~1000	1 Tier 2 Row	515	1260	1855(A-1)	2030(A-1)	2205(A-2)	2380(A-2)	2555(A-2)	2730(A-2)

Note: 1. Standard Steel Rack, delivered disassembled. Specil design available on request.
2. ( ) show style of rack in figure, Dwg No.

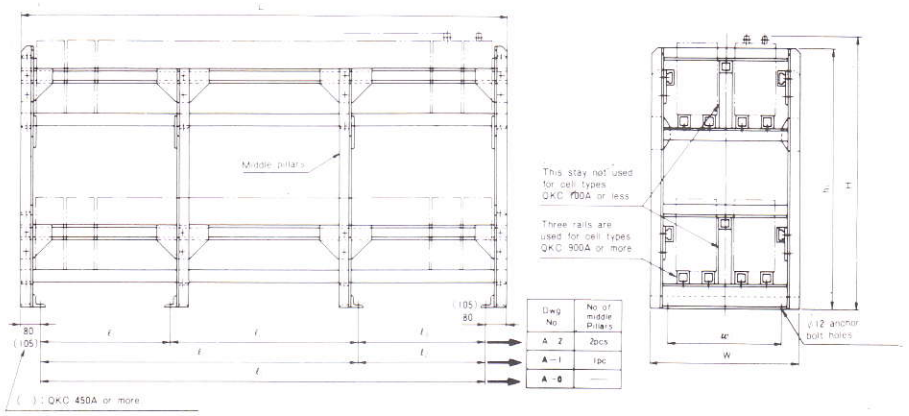
(1 Tier 2 Row)

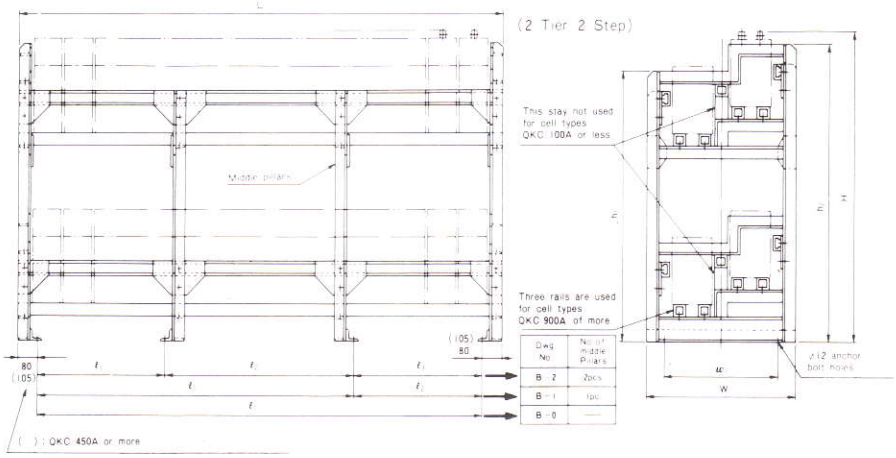


2.Double Tier Construction Rack

	Cell Type	Rack Construction	Overall Dimensions Approx.(mm)						
			Height	Width	Length				
					10 cells/Row	11 cells/Row	12 cells/Row	13 cells/Row	14 cells/Row	15 cells/Row
For QKC, QSC, QHC Pocket Type	QKC30C~50C QSC20C~40C QHC20C~30C	2 Tier 2 Row 2 Tier 2 Step	1161 1325	520	$630^{(A-0)}_{(B-0)}$	$682^{(A-0)}_{(B-0)}$	$734^{(A-0)}_{(B-0)}$	$786^{(A-0)}_{(B-0)}$	$838^{(A-0)}_{(B-0)}$	$890^{(A-0)}_{(B-0)}$
	QKC60C~80C QSC50C~60C QHC40C~50C	2 Tier 2 Row 2 Tier 2 Step	1161 1325	520	$865^{(A-0)}_{(B-0)}$	$941^{(A-0)}_{(B-0)}$	$1016^{(A-0)}_{(B-0)}$	$1092^{(A-0)}_{(B-0)}$	$1167^{(A-0)}_{(B-0)}$	$1243^{(A-0)}_{(B-0)}$
	QKC100C QSC80C QHC60C~80C	2 Tier 2 Row 2 Tier 2 Step	1161 1325	524	$1155^{(A-0)}_{(B-0)}$	$1260^{(A-0)}_{(B-0)}$	$1365^{(A-0)}_{(B-0)}$	$1470^{(A-0)}_{(B-0)}$	$1575^{(A-0)}_{(B-0)}$	$1680^{(A-0)}_{(B-0)}$
	QKC120C~200C QSC100C~150C QHC100C~150C	2 Tier 2 Row 2 Tier 2 Step	1335 1581	570	$1355^{(A-1)}_{(B-1)}$	$1480^{(A-1)}_{(B-1)}$	$1605^{(A-1)}_{(B-1)}$	$1730^{(A-1)}_{(B-1)}$	$1855^{(A-1)}_{(B-1)}$	$1980^{(A-1)}_{(B-1)}$
	QKC250C~350C QSC200C~300C QHC200C~250C	2 Tier 2 Row 2 Tier 2 Step	1335 1581	620	$1855^{(A-1)}_{(B-1)}$	$2030^{(A-1)}_{(B-1)}$	$2205^{(A-2)}_{(B-2)}$	$2380^{(A-2)}_{(B-2)}$	$2555^{(A-2)}_{(B-2)}$	$2730^{(A-2)}_{(B-2)}$
	QKC400C~500C QSC350C~450C QHC300C~400C	2 Tier 2 Row 2 Tier 2 Step	1367 1613	850	$1905^{(A-1)}_{(B-1)}$	$2080^{(A-1)}_{(B-1)}$	$2255^{(A-2)}_{(B-2)}$	—	—	—
	QKC600C~800C QSC500C~600C QHC450C~500C	2 Tier 2 Row 2 Tier 2 Step	1363 1609	1060	$1905^{(A-1)}_{(B-1)}$	$2080^{(A-1)}_{(B-1)}$	$2255^{(A-2)}_{(B-2)}$	—	—	—
	QKC900C~1000C QSC700C~900C QHC600C~700C	2 Tier 2 Row	1363	1310	1905(A-1)	2080(A-1)	2255(A-2)	—	—	—
For QFD, QFG, Sintered Plate Type	QFD20A~80B QFG20~60	2 Tier 2 Row 2 Tier 2 Step	1102 1266	520	$675^{(A-0)}_{(B-0)}$	$732^{(A-0)}_{(B-0)}$	$789^{(A-0)}_{(B-0)}$	$846^{(A-0)}_{(B-0)}$	$903^{(A-0)}_{(B-0)}$	$960^{(A-0)}_{(B-0)}$
	QFD100A~120B QFG80~100	2 Tier 2 Row 2 Tier 2 Step	1102 1266	520	$910^{(A-0)}_{(B-0)}$	$991^{(A-0)}_{(B-0)}$	$1071^{(A-0)}_{(B-0)}$	$1152^{(A-0)}_{(B-0)}$	$1232^{(A-0)}_{(B-0)}$	$1313^{(A-0)}_{(B-0)}$
	QFD150A	2 Tier 2 Row 2 Tier 2 Step	1102 1266	524	$1155^{(A-0)}_{(B-0)}$	$1260^{(A-0)}_{(B-0)}$	$1365^{(A-0)}_{(B-0)}$	$1470^{(A-0)}_{(B-0)}$	$1575^{(A-0)}_{(B-0)}$	$1680^{(A-0)}_{(B-0)}$
	QFD200A~250A QFG120~200	2 Tier 2 Row 2 Tier 2 Step	1270 1516	570	$1355^{(A-1)}_{(B-1)}$	$1480^{(A-1)}_{(B-1)}$	$1605^{(A-1)}_{(B-1)}$	$1730^{(A-1)}_{(B-1)}$	$1855^{(A-1)}_{(B-1)}$	$1980^{(A-1)}_{(B-1)}$
	QFD300A~450B QFG250~350	2 Tier 2 Row 2 Tier 2 Step	1270 1516	620	$1855^{(A-1)}_{(B-1)}$	$2030^{(A-1)}_{(B-1)}$	$2205^{(A-2)}_{(B-2)}$	$2380^{(A-2)}_{(B-2)}$	$2555^{(A-2)}_{(B-2)}$	$2730^{(A-2)}_{(B-2)}$
	QFD500A QFG400~500	2 Tier 2 Row 2 Tier 2 Step	1280 1526	850	$1905^{(A-1)}_{(B-1)}$	$2080^{(A-1)}_{(B-1)}$	$2255^{(A-2)}_{(B-2)}$	—	—	—
	QFD600A~900B QFG600~700	2 Tier 2 Row 2 Tier 2 Step	1280 1526	1060	$1905^{(A-1)}_{(B-1)}$	$2080^{(A-1)}_{(B-1)}$	$2255^{(A-2)}_{(B-2)}$	—	—	—
	QFD1000A~1200A QFG800~1000	2 Tier 2 Row	1280	1310	1905(A-1)	2080(A-1)	2255(A-2)	—	—	—

Note: 1. Standard Steel Rack, delivered disassembled. Specil design available on request.
2. ( ) show style of rack in figure. Dwg No.





OPTIONAL ACCESSORIES

1. Reactor Plug – Catalyst Plug

Features:

- Makes no water topping-up required for long period of time.
- Emits no alkali fumes.
- It is safe.
- It is simple in handling.

Principle:

It uses a purely chemical system in which the mixture of oxygen and hydrogen gases generated in a storage battery is vaporized into water vapour by high performance catalyst reaction, cooled at the device walls, reverted into water, and returned into the electrolyte. The reaction is:

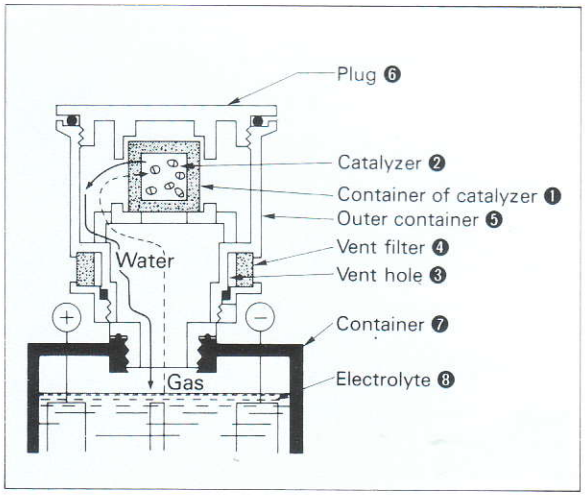
$$2H_2 + O_2 \rightarrow 2H_2O + 115.6\ Kcal$$

Operation:

(1) The gas mixture generated in the storage battery reaches ② via ① as shown by the dotted line.
During this process, the sulphuric acid portion contained in the gas mixture is removed at ①, and only the mixed gases of oxygen and hydrogen are reacted at ②.

(2) The gas mixture reacted at ② is vaporized into water vapour by catalyst reaction, cooled by inner walls of the device at ⑤, and turned into water as shown by the solid lines.

(3) The water produced returns to ⑧ as shown by the solid line.



Since the gas collection action of the device is a continuous repetition of (1)→(2)→(3)→(1)→(2), no reduction in electrolyte will occur.

Gases generated in a storage battery may not be in the exact proportion of $H_2 : O_2 = 2 : 1$, but generally hydrogen gas is in excess. In this case the device absorbs the oxygen in short from the atmosphere through ③.

In an event that an excessive amount of gas is generated from a cause such as charger malfunctions, the device will emit the gas as generated from ③ into atmosphere without reacting at the catalyst, thus controlling the catalyst reactions and working as the safety device to prevent the catalyst plug (reactor) from thermal deformation and to prevent the internal pressure from rising.

Note:

- This plug should be replaced with a new plug within five years after installation.
- It is recommended that this plug is used in combination with the charger having constant voltage device manufactured by Yuasa, or equivalent.
- The standard set value of charge voltage per unit cell are as follows:

Type	Poket plate	Sintered plate
Floating Charge Voltage (V/Cell)	QKC 1.44 QSC 1.42 QHC 1.42	1.35
Equalizing Charge Voltage (V/Cell)	QKC 1.63 QSC 1.63 QHC 1.60	1.47

- If a battery is used in ambient temperature of monthly average of below −5°C/23°F the catalyst may freeze and may cause to rupture the container.
Never use the battery at this low temperature.

2. Low Electrolyte Level Relay

It is very convenient for maintenance to use a device which detects the electrolyte level when it is reduced to a level below the specified level, and issues an alarm. Low electrolyte level relay is readily available to satisfy such customer's needs. Upon request, it will be installed when purchased together with the battery charger.

YUASA···CLEAN ENERGY FOR THE WORLD

● Specifications subject to change without prior notice.

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